



Reliability Centred Maintenance (RCM)

For Onshore & Offshore Process Facilities

Reliability Centered Maintenance (RCM) is a proven methodology for developing effective maintenance strategies. It is a reliability optimization tool that captures daily decisions on repair procedures, their impact on planned execution and analyze the information for understanding future reliability, resulting in:

Reliability Centred Maintenance (RCM)

- Doing the right things at the right time
- Applications of appropriate strategies for each type of equipment
- Minimizing cost
- Employing the right tool
- Identifying and correcting the faults quickly
- Taking appropriate actions with required information being captured

VELOSI RCM Methodology:

VELOSI's RCM Methodology is a Risk-Based approach which includes the following steps:

- Screening analysis
- FMEA (Failure Mode & Effect Analysis)
- Risk analysis
- Risk Based Maintenance (RBM) strategy development

Maintenance Strategy

Maintenance strategies developed include:

- Screening analysis
- FMEA (Failure Mode & Effect Analysis)
- Risk analysis
- Functional Testing
- Corrective Maintenance
- One Time Task
- Vendor Maintenance
- Inspection Program (RBI)
- Regulatory Mandated
- Redesign or Operational Changes

RCM Related Services

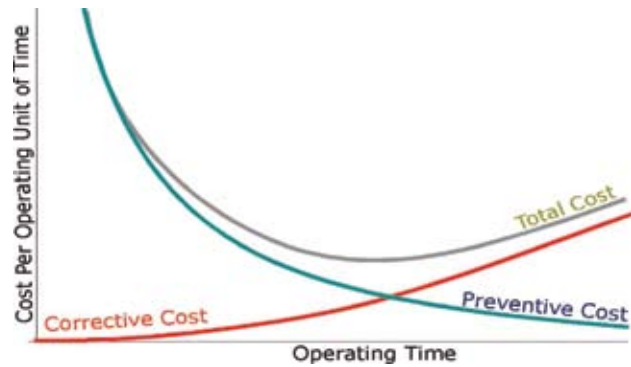
VELOSI services do not stop at delivering the RCM study report, but offer following optional services:

- Task bundling (job packing)
- Preparation of task list and maintenance plan
- Load leveling and initial resource planning (prior to upload in CMMS)
- Preparation of PMRs (Preventive Maintenance Routines)
- Data Mapping and assistance to upload in the CMMS
- Establishment of KPIs and help client to launch a living program

Improve the reliability of your facility through targeted, optimized strategies.

Maintenance Optimization Services

VELOSI uses state-of-the-art maintenance optimization techniques to optimize task intervals & spending on maintenance. Maintenance optimization can be done for hidden and other failures using VELOSI's 'Economic Optimization' and 'Absolute Acceptance Criteria'.

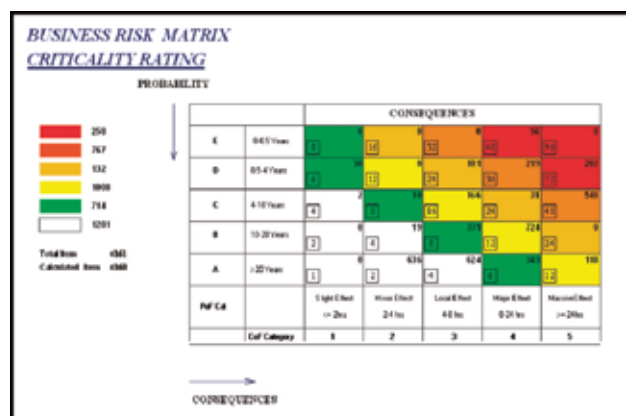


Software tool used for RCM

VAIL-RCM is a VELOSI in-house developed RCM tool which provides RCM Analysis, Data Management and Reporting. This software is based on OREDA Offshore Reliability Data 2002 Standards and provides extensive Customization Capabilities. It helps to analyze RCM in three levels (FMEA/FMECA, Risk Analysis and Plant Maintenance Routines).

Its key features include:

- In-built FMEA and reliability data for equipment based on OREDA, works like an expert system
- Capability to perform FMECA, risk analysis and planned maintenance routines
- Advance reporting features (incl. Trends)
- Advanced user view capabilities
- MTBF & MTTR strategy for reliability analysis
- Risk matrix methodology
- Advance data importing/exporting features

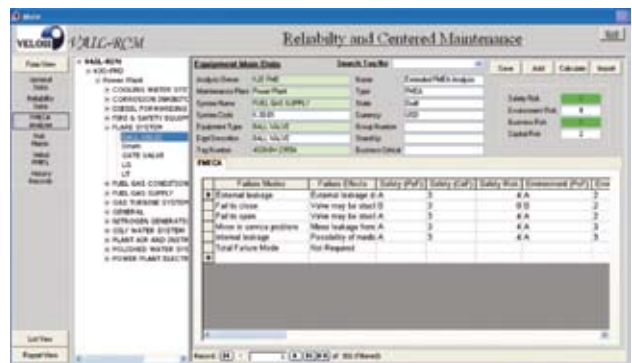


The benefits of using RCM

- Identify and correct chronic recurring equipment problems
- Avoid production losses caused by unexpected failures of critical equipments
- Increase intervals between turnarounds
- Decrease in hidden failures & process trips
- Identify equipment that is deemed 'non-critical'
- Eliminating many unnecessary maintenance tasks

VAIL-RCM Analysis Levels

- FMECA
- VAIL-RCM performs FMECA (Failure Mode, Effects, and Criticality Analysis) based on its in-built database (OREDA offshore reliability database) in the most effective and efficient way.
- Operator reliability data (OREDA:2002)
- Risk analysis
- Preventive maintenance routines



RCM Training

VELOSI can provide customized RCM training technology transfer for both management and nominated RCM team. Our training session includes:

- (1) RCM Methodology
- (2) Working process & group exercise
- (3) VAIL-RCM software usage